
The Genus *Uvariopsis* (Annonaceae) in Tropical Africa, with a Recombination and One New Species from Cameroon

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ABSTRACT. *Uvariopsis submontana* Kenfack, Gosline & Gereau (Annonaceae) is described from premontane habitats in western Cameroon. The new species is morphologically most similar to *U. korupensis* Gereau & Kenfack, recently described from lower elevations in western Cameroon. The monotypic genus *Dennettia* Baker f. is completely consistent with the morphological and palynological circumscription of *Uvariopsis* Engler, and is included in the latter genus under the new combination *U. tripetala* (Baker f.) G. E. Schatz. A key to the 16 species of this tropical African genus is presented.

RÉSUMÉ. *Uvariopsis submontana* Kenfack, Gosline & Gereau (Annonaceae) est décrit d'habitats pré-montagnards de l'Ouest du Cameroun. Quant à sa morphologie, la nouvelle espèce ressemble au plus près à *U. korupensis* Gereau & Kenfack, récemment décrit d'altitudes plus basses de l'Ouest du Cameroun. Le genre monotypique *Dennettia* Baker f. est tout à fait consistant avec la circonscription morphologique et palynologique d'*Uvariopsis* Engler et est inclus dans celui-ci sous la nouvelle combinaison *Uvariopsis tripetala* (Baker f.) G. E. Schatz. Une clé des 16 espèces de ce genre de l'Afrique tropicale est présentée.

Key words: Annonaceae, Cameroon, *Dennettia*, tropical Africa, *Uvariopsis*.

Uvariopsis Engler (Engler & Diels, 1899) is a strictly African genus of shrubs and trees in the Annonaceae, placed by Fries (1959) in subfamily Annonoideae, tribe Unoneae, and "Monanthotaxis-Gruppe." Using primarily floral characters, Heusden (1992) included *Uvariopsis* in his "Uvariastrum-group" with the exclusively African genera

Dennettia Baker f., *Dielsiothamnus* R. E. Fries, *Meiocarpidium* Engler & Diels, *Mischogyne* Exell, *Monocyclanthus* Keay, *Polyceratocarpus* Engler & Diels, *Uvariastrum* Engler, and *Uvariodendron* (Engler & Diels) R. E. Fries. Based on characters of the fruit and seeds, Setten and Koek-Noorman (1992) put *Uvariopsis* in their "Group 13" with *Dennettia*, *Mischogyne*, *Uvariastrum*, *Uvariodendron*, and *Hexalobus* A. DC., another exclusively African genus. In a phylogenetic analysis based on a large assembly of characters (Doyle & Le Thomas, 1996), *Uvariopsis* is found among the genera on the most advanced branch of the family ("annonoid clade").

Uvariopsis may be distinguished from neighboring genera of Annonaceae by the following combination of characters (Keay, 1954; Robson, 1960; Le Thomas, 1969; Verdcourt, 1971; Heusden, 1992; Setten & Koek-Noorman, 1992; Doyle & Le Thomas, 1994, 1996): indument simple; sepals 2 or 3, connate at least at base; petals 3 or 4, uniseriate, valvate; floral receptacle elongate at base and apex; anthers extrorse or latrorse, discoid at apex; pollen in flat tetrads; gynoecium and fruit apocarpous, composed of several free mericarps; stigmas erect; ovules numerous, biseriate; fruit pedicellate, the mericarps indehiscent, sessile or with stipe shorter than fertile part; seeds smooth (not tuberculate), the endocarp with lamelliform ruminations.

In their revision of the genus, Robyns and Ghesquière (1933) recognized ten species of *Uvariopsis* in western and central tropical Africa. A total of six new species have subsequently been described from Gabon (Pellegrin, 1948), Angola (Exell & Mendonça, 1951), West Africa (Keay, 1952), Tanzania (Verdcourt, 1986), and Cameroon (Gereau &

Kenfack, 2000). Keay (1954: 50, 47) placed *Uvariopsis pedunculosa* (Diels) Robyns & Ghesquière in synonymy with *U. dioica* (Diels) Robyns & Ghesquière, and reduced *Uvariopsis chevalieri* Robyns & Ghesquière to synonymy under *Uvariastrum eliotianum* (Engler & Diels) Sprague & Hutchinson. Le Thomas (1969: 298, 303) placed *Uvariopsis batesii* Robyns & Ghesquière in synonymy with *U. solheidii* (De Wildeman) Robyns & Ghesquière and accepted the transfer of *Thonnera congolana* De Wildeman into *Uvariopsis*. The number of currently recognized species thus comes to 14.

As is evident from the key, the majority of species of *Uvariopsis* are strictly trunciflorous. However, recent explorations at medium elevations in wet submontane forest in South West Province, Cameroon, have revealed the presence of a new species with a more extreme degree of trunciflory than any previously known species, with inflorescences densely covering the base of the tree and extending to several meters above the ground. In the present article we describe this new species and transfer the monotypic genus *Dennettia* into *Uvariopsis*.

Uvariopsis submontana Kenfack, Gosline & Gereau, sp. nov. TYPE: Cameroon. South West Province: Ndian Division, Rumpi Hills, ca. 800 m, 4°57'N, 9°02'E, 6 Feb. 2000 (fl), *D. Kenfack 1334* (holotype, YA; isotypes, K, MO, SCA). Figure 1.

Haec species quoad inflorescentias omnes truncifloras flores manifeste pedicellatos alabastrum florale ovoideo-conicum pyramidaleve atque petalos quattuor basi connatos ad *U. korupensem* maxime accedit, sed ab ea lamina foliari 16–38 × 5–11 cm (vs. 30–52 × 9–14 cm) atque praecipue sepalis 5–10 (vs. 2–5) mm longis distinguitur.

Tree 8–15(–25) m tall, to 30 cm DBH, monoecious; bark dark green to black; slash pale yellow to light brown, quickly oxidizing to brown; young branchlets appressed pubescent, glabrescent; internodes 2.0–4.5 cm long. Petiole 3–8 mm long, 3–5 mm thick, appressed pubescent; leaf blade chartaceous to subcoriaceous, oblanceolate to oblong-oblanceolate, 16–38 × 5–11 cm, rounded to subcordate at base, acutely acuminate at apex, glabrous above, glabrous or with very sparse appressed pubescence on surface beneath; midrib glabrous and slightly impressed above, prominent and sparsely pubescent beneath; secondary veins 9 to 18 on each side of midrib, brochidodromous, joined and arcing 4–7 mm from margin, slightly raised above, more so beneath; intersecondary veins ca. 0.75 length of secondaries; tertiary veins reticulate, raised beneath. Inflorescences cauliflorous, covering base of tree in dense patches of up to 500 flow-

ers, sparser at 2 m, ceasing before first branches at 6–8 m above ground; individual fascicles difficult to discern but apparently consisting of 6 to 50 flowers each; staminate and pistillate fascicles arising from separate brachyblasts, the staminate above, the pistillate at and near base of bole; bracts 2 to 4 at base of pedicel, ovate-orbicular, 1.0–1.6 mm long and wide; pedicels ascending-puberulent, the staminate 2.5–5.0 cm long, the pistillate 3–6 cm long in flower, in fruit 2.5–9.0 cm long, 3–7 mm thick. Immature flower buds sessile, ovate, completely covered by connate sepals that split into 2 as bud matures; mature flower buds ovoid-conic to pyramidal, 1.5–2.0 × 2.0–2.5 cm. Staminate flowers with sepals triangular, 5–10 × 6–12 mm, dark red, chartaceous, tomentulose without, glabrous within; petals 4, fleshy, lanceolate to ovate, acute at apex, 8–18 × 5–8 mm, connate at base for 4–9 mm, densely tomentulose without, velutinous within; androecium a conical receptacle ca. 5 × 2–3 mm with > 100 stamens; stamens 0.4–0.7 × ca. 0.4 mm, with a very short filament and two lateral thecae ca. 0.8 length of stamen. Pistillate flowers with sepals broadly ovate, 6–8 × 6–9 mm, dark red, chartaceous, appressed puberulous without, glabrous within; petals 4, fleshy, lanceolate to broadly lanceolate, acute at apex, 15–17 × 5–7 mm, connate at base for 3–4 mm, tomentulose without, velutinous within; gynoecium a globose receptacle 7–8 × 7–8 mm with 50 to 60 ovaries; ovary cylindrical to prismatic, 1.5–3.5 × 0.8–1.5 mm, villous; stigma sessile, glabrous, globular, ca. 0.5 mm diam.; ovules 9 to 12 in ranks of 4 to 6. Fruit composed of 9 to 25 nearly sessile, densely packed monocarps; monocarps pale green ripening dark yellow, sparsely appressed pubescent, oblong-ovoid, 1.7–8.0 × 1.3–5.5 cm, apiculate, constricted in dried specimens around two offset ranks of 3 to 6 seeds; seeds ovate-ellipsoid, 18–25 × 8–13 mm.

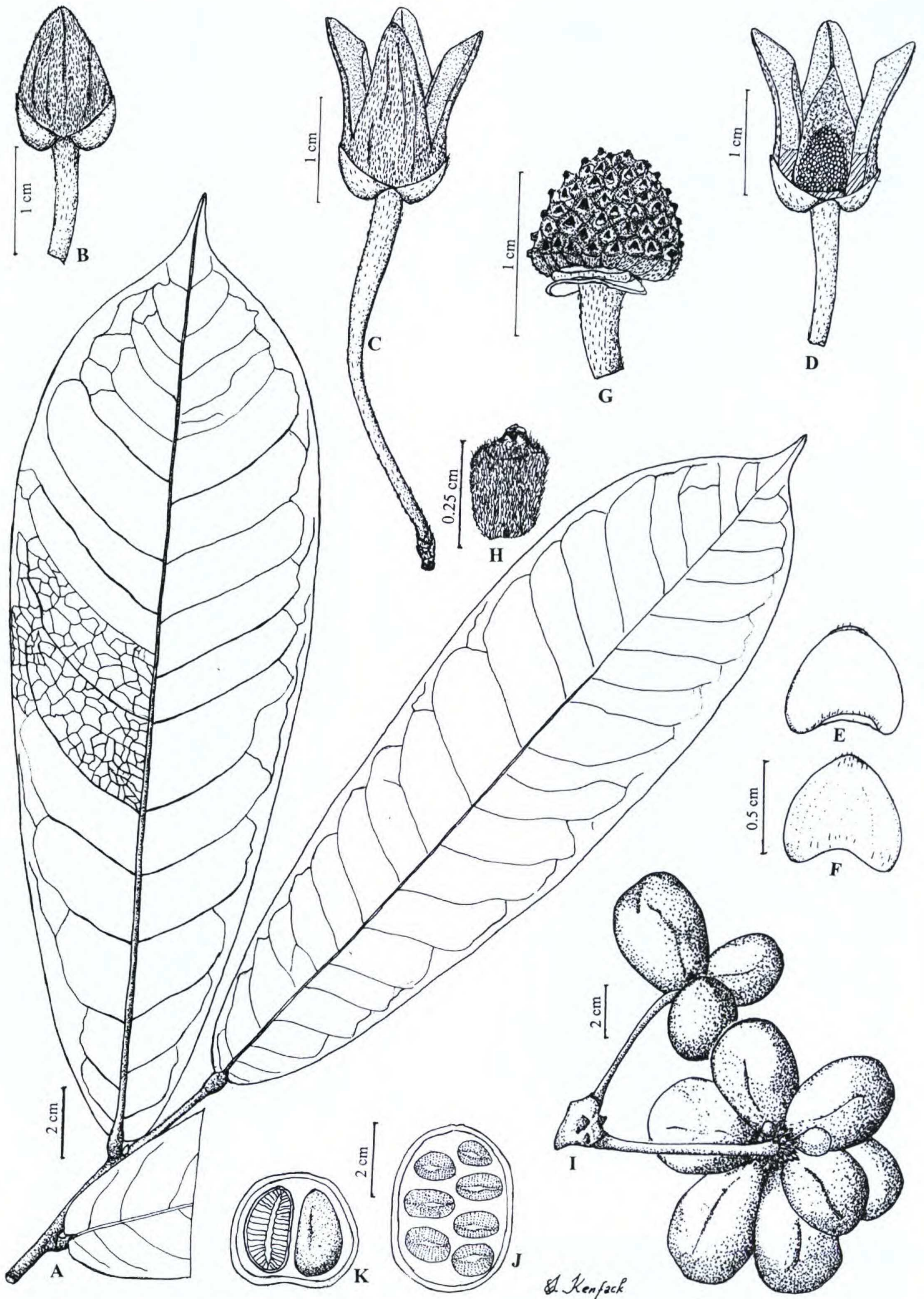
Habitat. Wet submontane forest on well-drained slopes at 780–1300 m altitude.

Distribution. Cameroon. South West Province, Rumpi Hills to Mount Kupe; Littoral Province, near Yingui.

Phenology. Flowers collected in January, February, and May; fruit collected in June and July.

Vernacular name. “Michile” in Bakossi (*Cheek 7131*).

Paratypes. CAMEROON. **South West Province:** hunters' path from Kupe Village to mountain top, 4°47'N, 9°41'E, 840 m, *Cheek 7131* (K, SCA); below Kupe rock near Esense river, 4°47'N, 9°41'E, 900 m, *Elad 69* (SCA); Mt. Kupe, Shrike trail, 1200 m, *Wheatley 398* (SCA); Mt. Kupe, Shrike trail, 1100 m, *Cable 1221* (K); Mt. Kupe, Shrike trail, 4°49'22"N, 9°41'21"E, 1000 m, *Kenfack*



E. Kenfack

Figure 1. *Uvariopsis submontana* Kenfack, Gosline & Gereau. —A. Apex of branchlet with leaves and detail of venation. —B. Pistillate flower bud. —C. Staminate flower. —D. Staminate flower with one petal removed, lateral view. —E. Inner surface of sepal. —F. Outer surface of sepal. —G. Gynoecium. —H. Detail of one carpel, lateral view. —I. Inflorescence. —J. Longitudinal section of mericarp. —K. Transverse section of mericarp. A–H drawn from the holotype, *Kenfack 1334* (YA); I–K drawn from *Kenfack 1373* (YA).



Figure 2. *Uvariopsis submontana* showing extreme trunciflory. Habitat shot in forest from Mt. Kupe, Cameroon, of Cheek 7131 photographed by Martin Cheek in January 1995.

1373 (YA); Mt. Kupe, Shrike trail, 4°49'13"N, 9°41'17"E, 1110 m, *Kenfack 1375* (YA); Mt. Kupe, Shrike trail, 1300 m, *Kenfack 1376* (YA); path onto ridge leading to Kupe rock, 4°47'N, 9°41'E, 1000 m, *Cable 2736* (K); Mt. Kupe, permanent sample plot at 1200 m on Shrike trail, 4°50'N, 9°40'E, *Lane 131* (K); forest trail 2 km S from Etube-Tape Village, 4°51'N, 9°42'E, 1100 m, *Lane 490, 534* (K); forest on Mt. Kupe, 2 km E of Nyassosso Government School, 4°49'N, 9°42'E, 1000 m, *D. W. Thomas 9039* (MO). **Littoral Province:** Nkam Division, Bataba, ca. 10 km W of Yingui, 780 m, *Kenfack 1602* (YA).

Uvariopsis submontana is most similar to and probably most closely related to *U. korupensis* Gereau & Kenfack, and can be distinguished from it by the characters in the key to species (below). These two species occupy closely adjoining geographic ranges in Cameroon's South West Province, *Uvariopsis submontana* in submontane forest at 780 to 1300 m altitude, and *U. korupensis* in extremely wet lowland forest at 50 to 160 m. *Uvariopsis submontana* is apparently never sympatric with any other species of *Uvariopsis*.

Gereau and Kenfack (2000) cited two specimens from submontane elevations as paratypes of *Uvariopsis korupensis*. *C. Doumenge 446*, from forested slopes in the Bakossi Mountains at 1100 m, is a fruiting collection with leaf measurements (32 × 12 cm) at the low end of the range for *U. korupensis*, and may represent another population of *U. submontana*, although flowering material is needed for a positive determination. *D. W. Thomas 4477*, from the side of Mount Cameroon at 600 m, has flowers and fruit but no leaves. Although floral measurements (sepals ca. 3 mm long; petals ca. 17 × 10 mm) are consistent with those of *U. korupensis*, more complete

material is needed, and *Thomas 4477* may represent another, still undescribed species.

Uvariopsis tripetala (Baker f.) G. E. Schatz, comb. nov. Basionym: *Dennettia tripetala* Baker f., Cat. pl. Oban 5, t. 2. 1913. TYPE: Nigeria. Benin City, Jan., *R. E. Dennett 44* (lectotype, designated here, K).

The monotypic genus *Dennettia* has traditionally been distinguished from *Uvariopsis* on the basis of its bisexual flowers with 3 sepals and 3 petals, versus unisexual flowers with 2 sepals and 4 petals. However, the description of *U. bisexualis* Verdcourt expanded the generic concept of *Uvariopsis* to encompass bisexual flowers. *Dennettia* occasionally exhibits flowers with 2 sepals and 4 petals, and *Uvariopsis congolana* (De Wildeman) R. E. Fries has 3 petals, making the number of perianth segments unreliable as a generic distinction. Pollen of *Dennettia* is very similar to that of *Uvariopsis*, being borne in tetrads and possessing a rugulate-perforate tectum, columellar infratectum, and basal foot-layer of irregular foliations; it differs from the pollen of *Uvariopsis* only by the absence of any granules in the infratectum (Le Thomas, 1981). All these arguments justify the unification of *Dennettia* with *Uvariopsis*. Baker (1913) described *Dennettia* with its one species, *D. tripetala*, on the basis of two syntypes, of which *Dennett 44* is here chosen as the lectotype over *Talbot 1496* to honor further the collector R. E. Dennett.

The key below distinguishes the 16 species of *Uvariopsis*, including the new species and the single species here transferred from *Dennettia*, primarily by floral characters.

KEY TO THE SPECIES OF *UVARIOPSIS* IN TROPICAL AFRICA

- 1a. Staminate (or hermaphrodite) inflorescences axillary or ramiflorous; pistillate inflorescences axillary, ramiflorous, or trunciflorous.
 - 2a. Flowers bisexual.
 - 3a. Sepals 2, petals 4; Tanzania *U. bisexualis* Verdcourt
 - 3b. Sepals 3; petals 3 (or 4); Cameroon, Nigeria *U. tripetala* (Baker f.) G. E. Schatz
 - 2b. Flowers unisexual, either staminate or pistillate.
 - 4a. Petals connate at base; Cameroon *U. zenkeri* Engler
 - 4b. Petals separate at base.
 - 5a. Leaf blade 5.5–16.1 cm long; petals ovate, 5–11 mm long; Angola, Cameroon, Democratic Republic of Congo, Kenya, Sudan, Uganda, Zambia *U. congolana* Robyns & Ghesquière
 - 5b. Leaf blade 12–23 cm long; petals suborbicular, 9–12 mm long; Ghana, Liberia *U. globiflora* Keay
- 1b. Staminate (or hermaphrodite) and pistillate inflorescences all trunciflorous.
 - 6a. Flowers sessile or very shortly pedicellate; Cameroon *U. sessiliflora* (Mildbraed & Diels) Robyns & Ghesquière
 - 6b. Flowers distinctly pedicellate.
 - 7a. Petals connate at base.
 - 8a. Flower buds ovoid-conic to pyramidal.
 - 9a. Leaf blade 12–30 cm long; pedicel 10–45 cm long; petals 3, broadly ovate; Cameroon, Democratic Republic of Congo, Gabon *U. congolana* (De Wildeman) R. E. Fries
 - 9b. Leaf blade 16–52 cm long; pedicel 1.5–8.0 cm long; petals 4, lanceolate to ovate.

- 10a. Leaf blade 30–52 × 9–14 cm; inflorescences mostly borne at base of trunk; sepals 2–5 mm long; petals 10–35 × 5–12 mm; Cameroon
 *U. korupensis* Gereau & Kenfack
- 10b. Leaf blade 16–38 × 5–11 cm; inflorescences densely covering trunk from base to 2 m or more above ground; sepals 5–10 mm long; petals 15–18 × 5–8 mm; Cameroon
 *U. submontana* Kenfack, Gosline & Gereau
- 8b. Flower buds globose.
- 11a. Staminate flower with petals 18–20 mm long; Côte d'Ivoire, Guinea-Konakry, Liberia, Sierra Leone
 *U. guineensis* Keay
- 11b. Staminate flower with petals 10–13 mm long; Cameroon, Democratic Republic of Congo, Gabon
 *U. vanderystii* Robyns & Ghesquière
- 7b. Petals separate at base.
- 12a. Petals ovate or elliptic-ovate, obtuse or acute.
- 13a. Leaf blade 12–20 cm long; staminate flower with petals 8–13 × 4.5–7.0 mm; pistillate flower with pedicel to 18 cm long and petals to 25 × 15 mm; Cameroon, Nigeria
 *U. dioica* (Diels) Robyns & Ghesquière
- 13b. Leaf blade 19–29 cm long; staminate flower with petals 7–8 × 3–5 mm; pistillate flower with pedicel 4.5–11.0 cm long and petals 8–9 × ca. 5 mm; Gabon
 *U. letestui* Pellegrin
- 12b. Petals linear-lanceolate to oblong-lanceolate or ovate-lanceolate, acute to acuminate.
- 14a. Petals linear-lanceolate; Cameroon, Nigeria
 *U. bakeriana* (Hutchinson & Dalziel) Robyns & Ghesquière
- 14b. Petals oblong-lanceolate or ovate-lanceolate.
- 15a. Leaf blade narrowly elliptic or oblanceolate, 11–20 × 4–6 cm; staminate flower with pedicel ca. 0.4 cm long; pistillate flower with pedicel ca. 7 cm long and petals 14–15 × ca. 7.8 mm; Angola
 *U. noldeae* Exell & Mendonça
- 15b. Leaf blade obovate-oblong, 16.6–29.0 × 5.0–9.5 cm; staminate flower with pedicel 1.5–1.7 cm long; pistillate flower with pedicel 8–16 cm long and petals 15–23 × 4.5–7.0 cm; Cameroon, Central African Republic, Congo Republic, Democratic Republic of Congo, Gabon
 *U. solheidii* (De Wildeman) Robyns & Ghesquière

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